FIG. 1

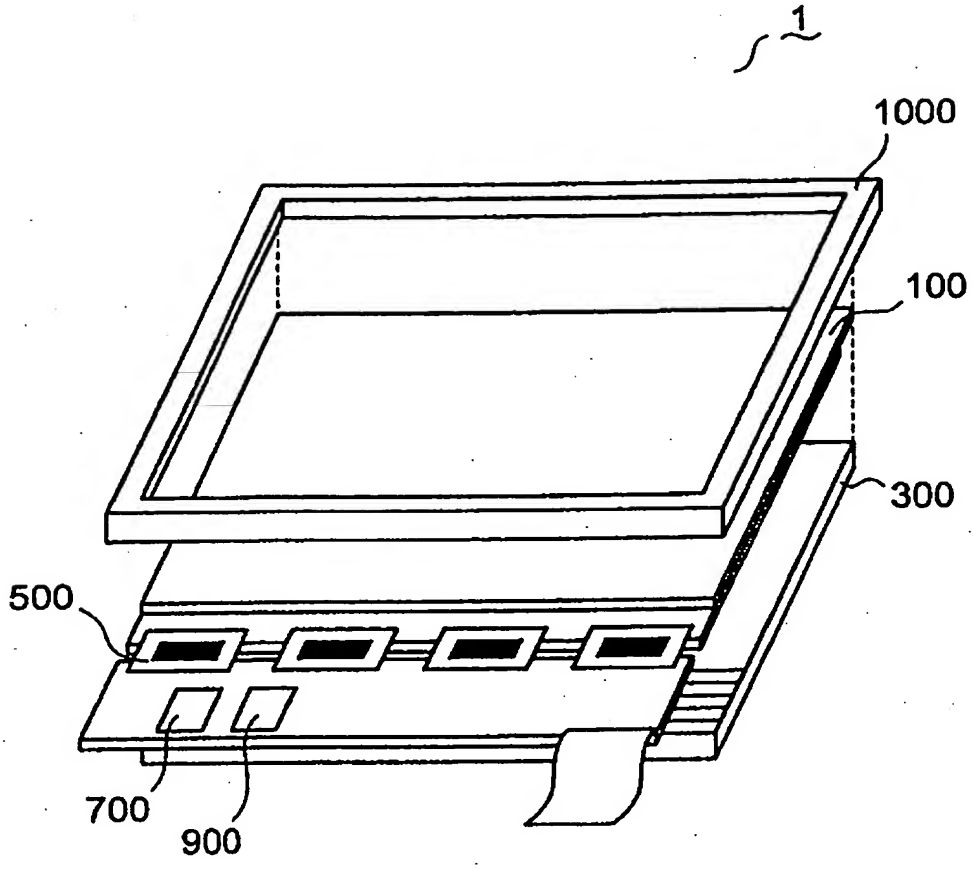


FIG. 2

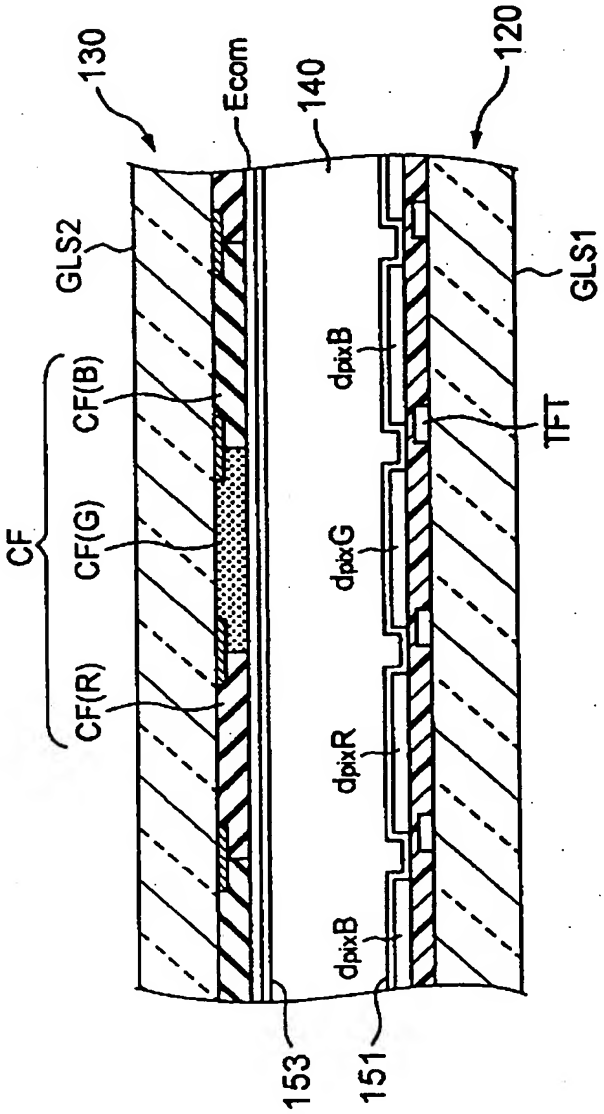

130
Ecom
140
120
GLS2
GLS1
CF
CF(B)
CF(G)
CF(R)
dpixB
dpixG
dpixR
dpixB
TFT
153
151

FIG. 3

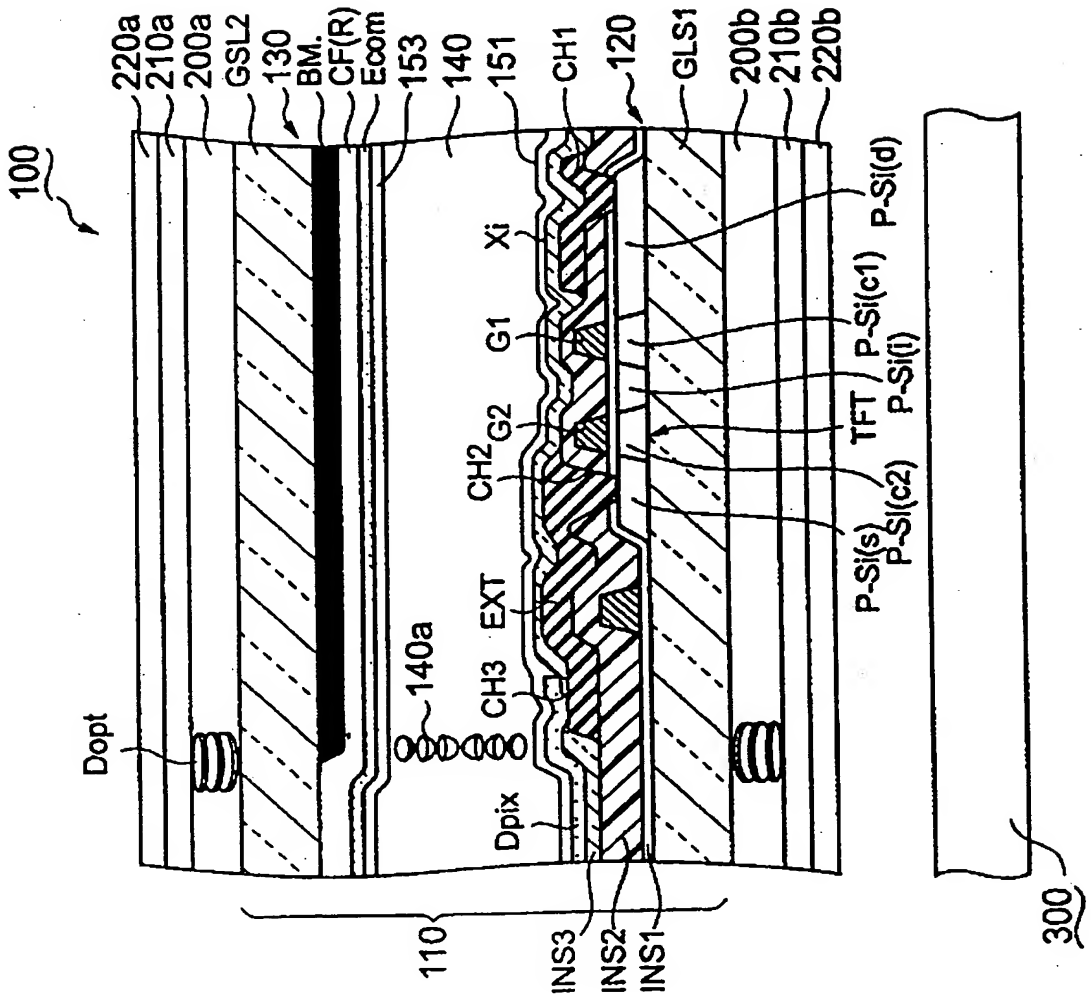

220a
210a
200a
GSL2
130
BM.
CF(R)
Ecom
153
140
151
CH1
120
GLS1
200b
210b
220b
100
Xi
G1
CH2
G2
EXT
CH3
140a
Dopt
Dpix
P-Si(d)
P-Si(c1)
P-Si(i)
TFT
P-Si(c2)
P-Si(s)
110
INS3
INS2
INS1
300

FIG. 4

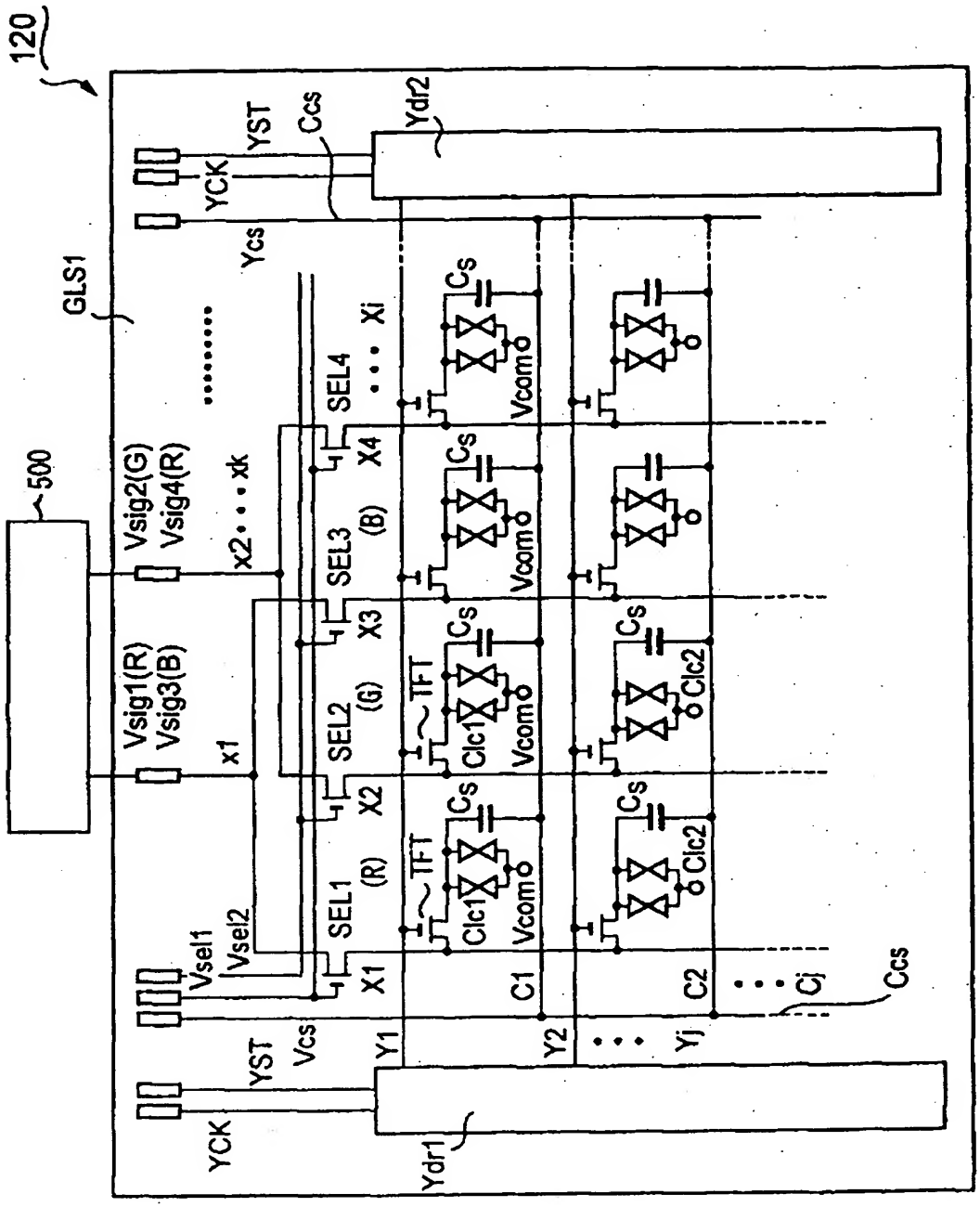

120
GLS1
500
YST
YCK
Ccs
Ydr2
Ycs
Vsig1(R)
Vsig3(B)
Vsig2(G)
Vsig4(R)
x1
x2 • • • xk
Vsel1
Vsel2
SEL1 (R)
SEL2 (G)
SEL3 (B)
SEL4
X1
X2
X3
X4
• • • Xi
TFT
Cs
Clc1
Clc2
Vcom
C1
C2
• • • Cj
Y1
Y2
• • • Yj
Vcs
Ydr1

FIG. 5

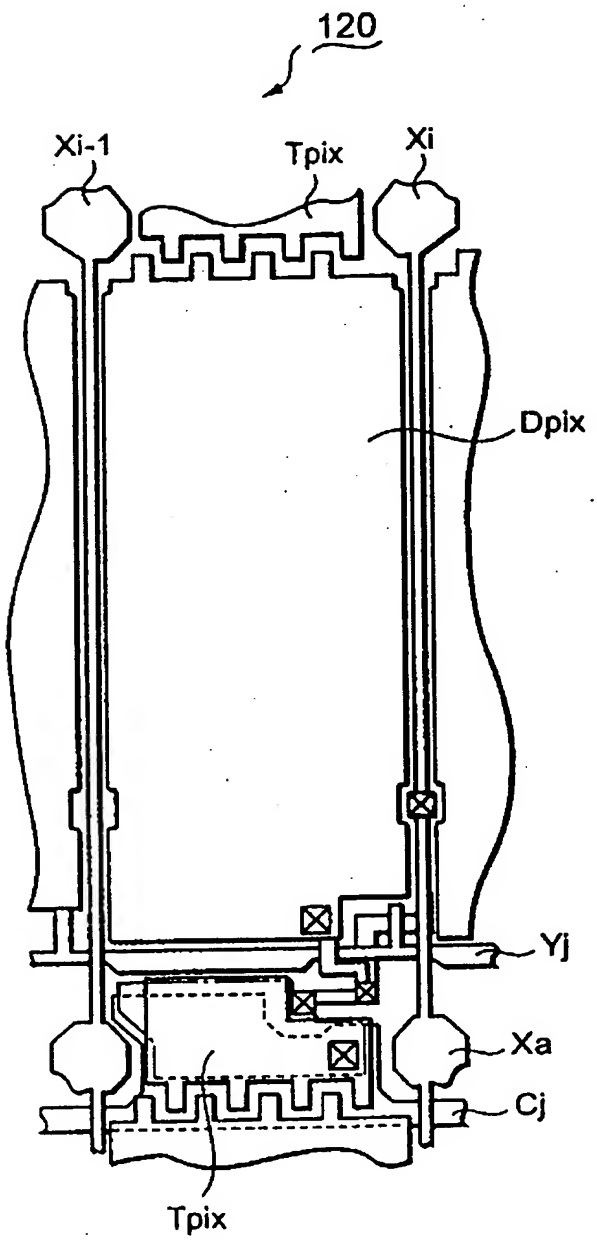


FIG. 6

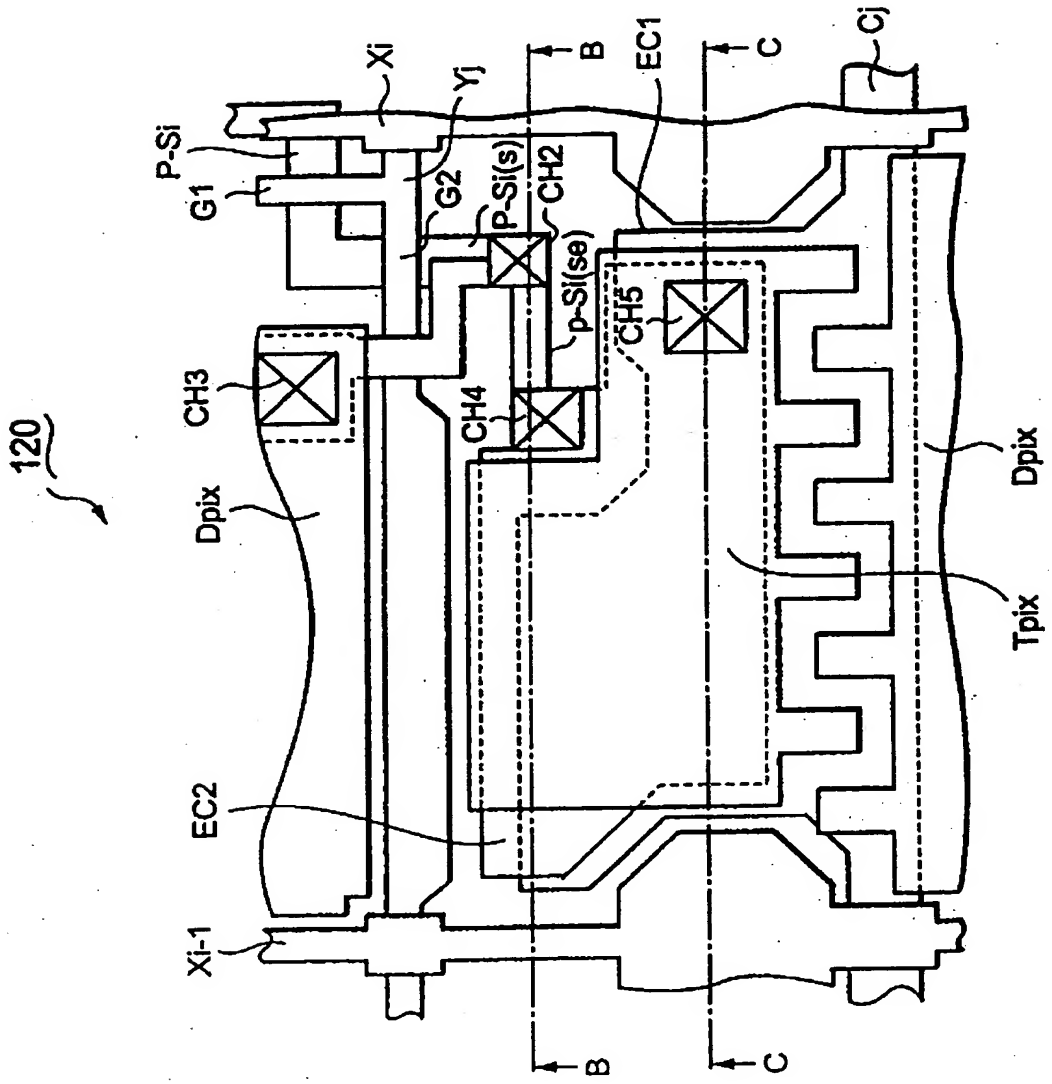

120
Xi
Yj
B
EC1
C
Cj
P-Si
G1
G2
P-Si(s)
CH2
p-Si(se)
CH5
CH3
CH4
Dpix
Dpix
Tpix
EC2
Xi-1
B
C

FIG. 7

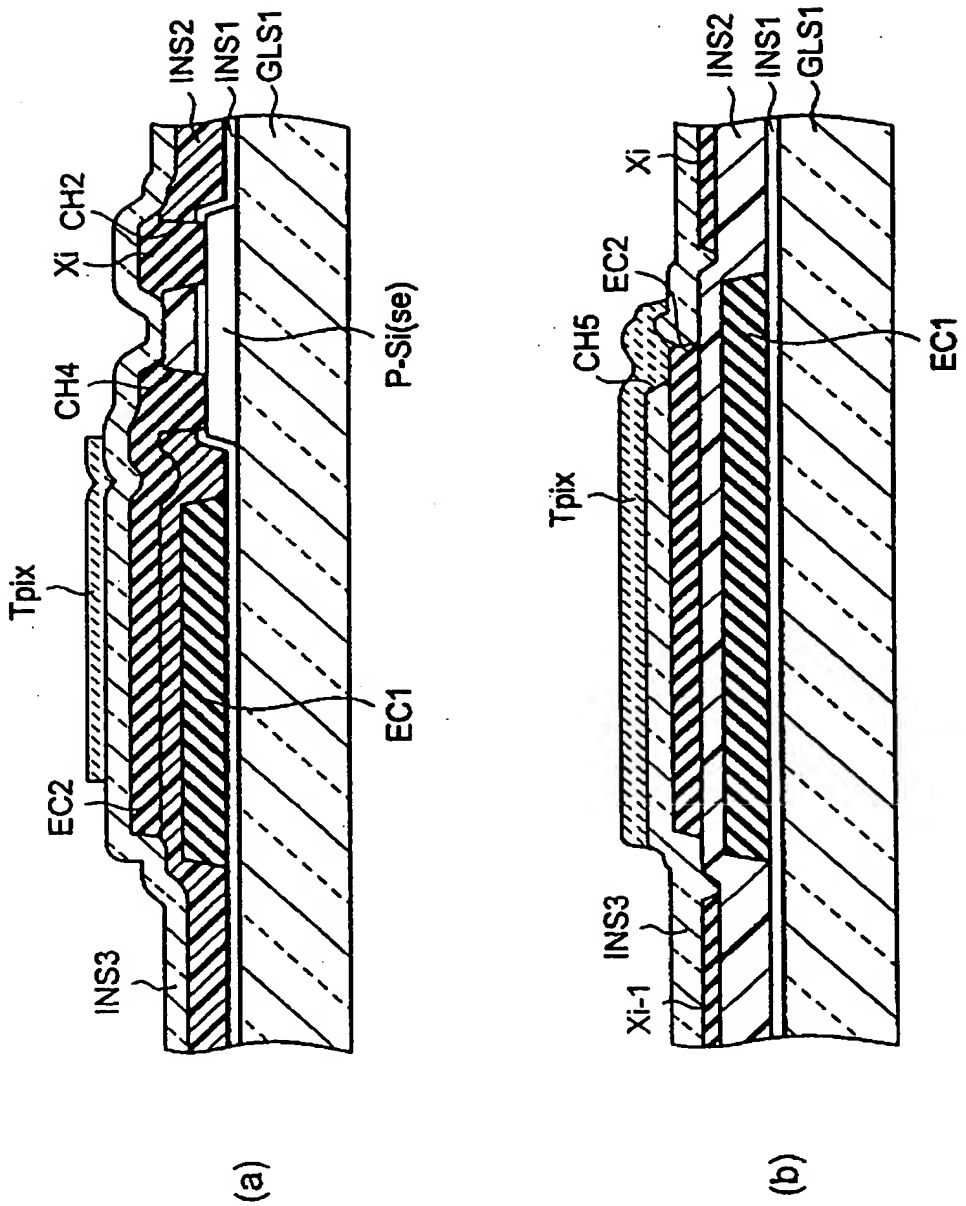
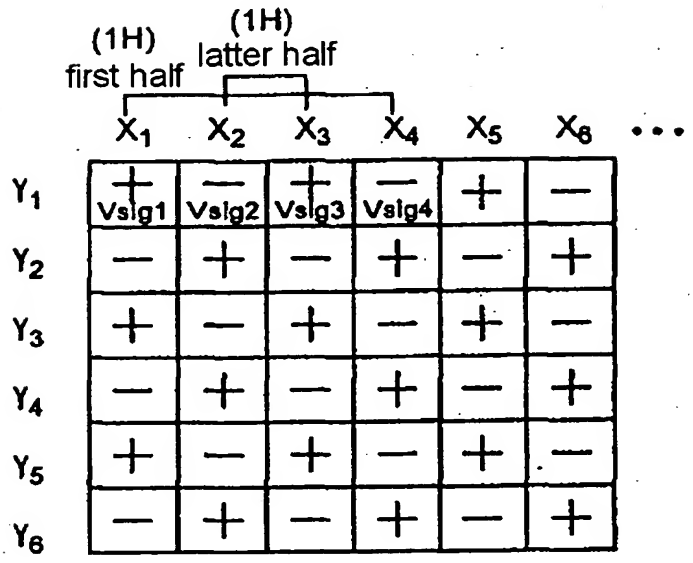

INS2
INS1
GLS1
Xi
CH2
CH4
Tpix
EC2
INS3
P-Si(se)
EC1
(a)
INS2
INS1
GLS1
Xi
EC2
CH5
Tpix
EC1
INS3
Xi-1
(b)

FIG. 8

(a)


(1H) first half
(1H) latter half
X1 X2 X3 X4 X5 X6 ...
Y1 Y2 Y3 Y4 Y5 Y6
Vsig1 Vsig2 Vsig3 Vsig4

(b)

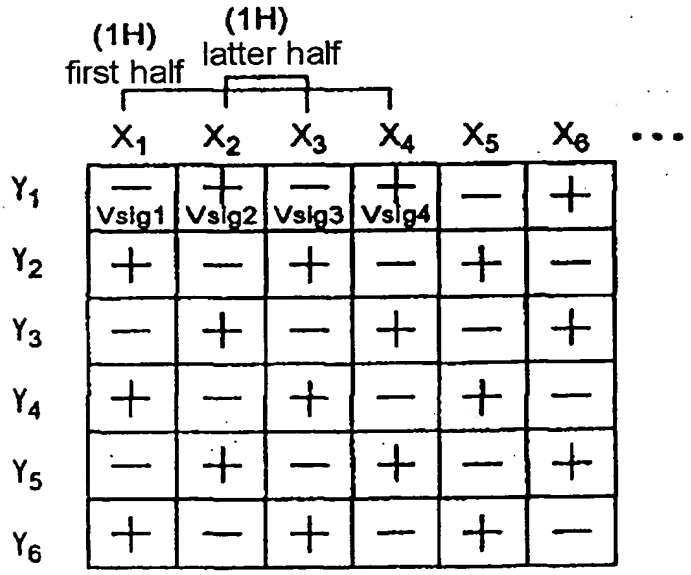

(1H) first half
(1H) latter half
X1 X2 X3 X4 X5 X6 ...
Y1 Y2 Y3 Y4 Y5 Y6
Vsig1 Vsig2 Vsig3 Vsig4

FIG. 9

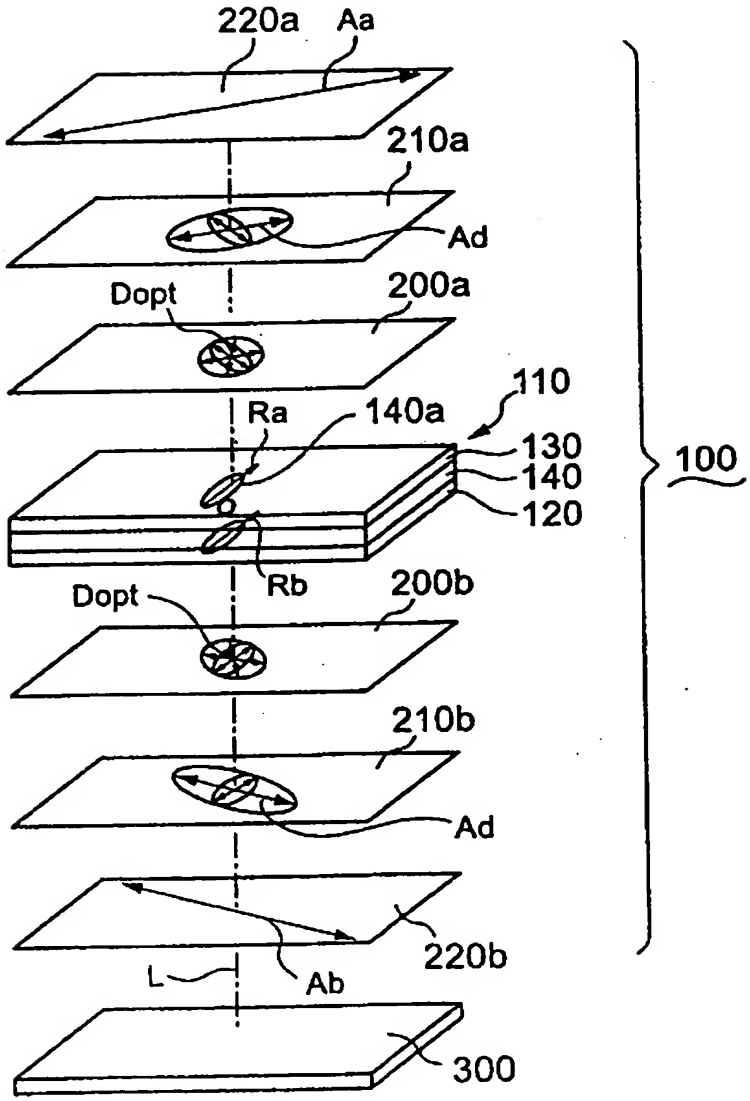

220a
Aa
210a
Ad
Dopt
200a
110
Ra
140a
130
140
120
100
Rb
Dopt
200b
210b
Ad
220b
L
Ab
300

FIG. 10

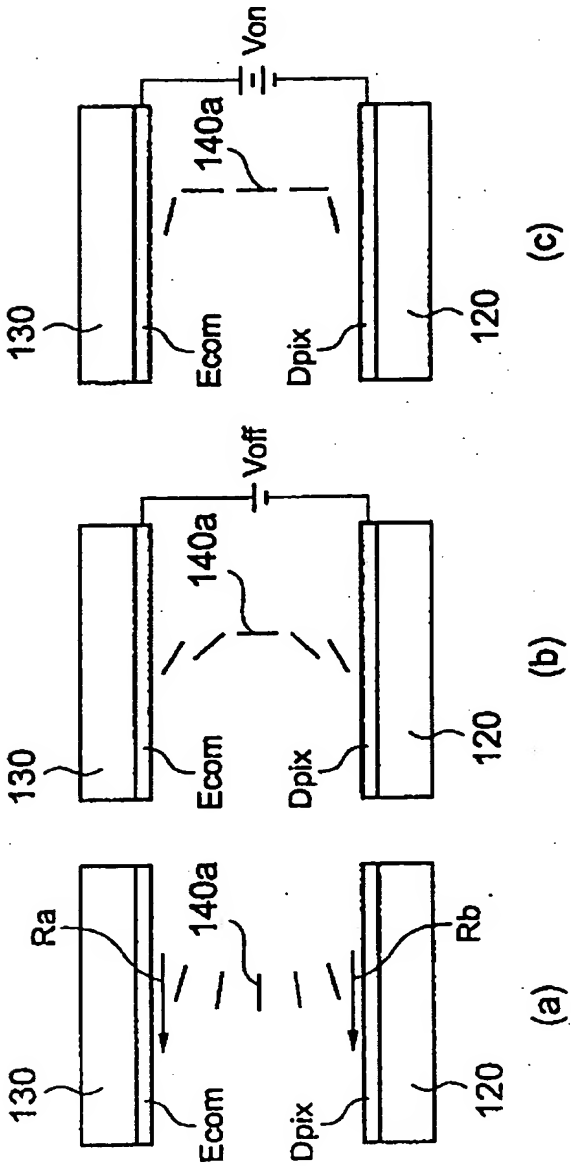
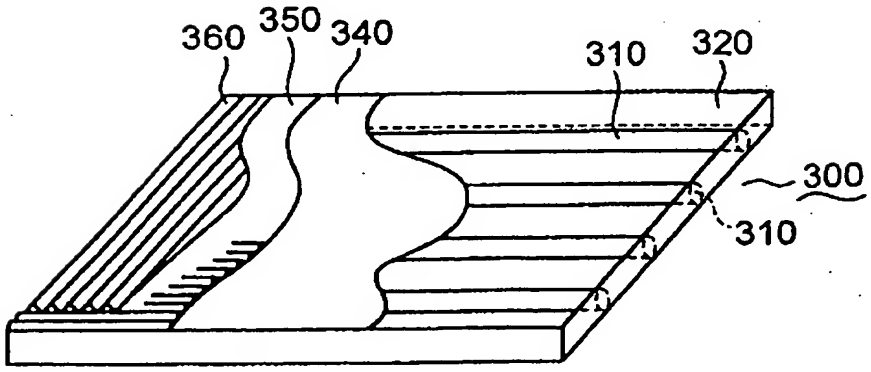

Von
140a
130
Ecom
Dpix
120
(c)
Voff
140a
130
Ecom
Dpix
120
(b)
Ra
140a
Rb
130
Ecom
Dpix
120
(a)

FIG. 11


360
350
340
310
320
300
310

11 / 14

FIG. 12

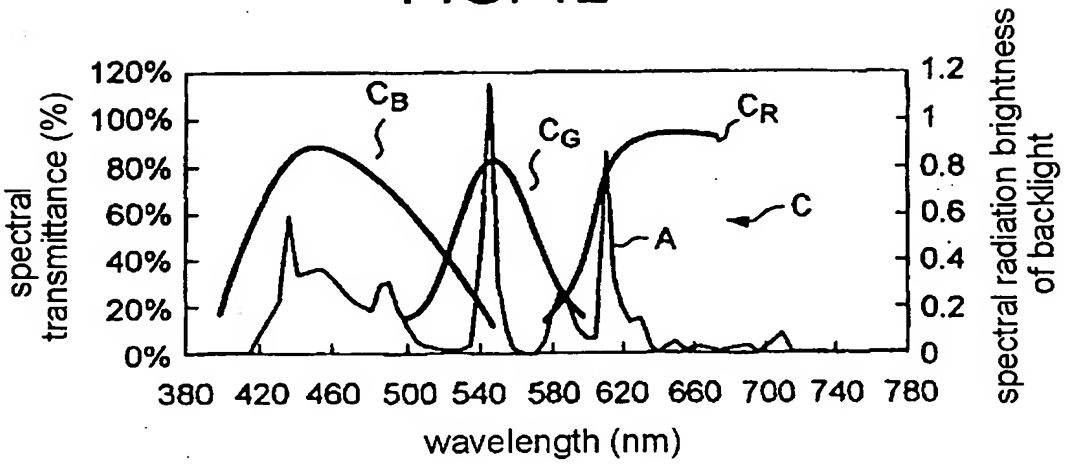


FIG. 13

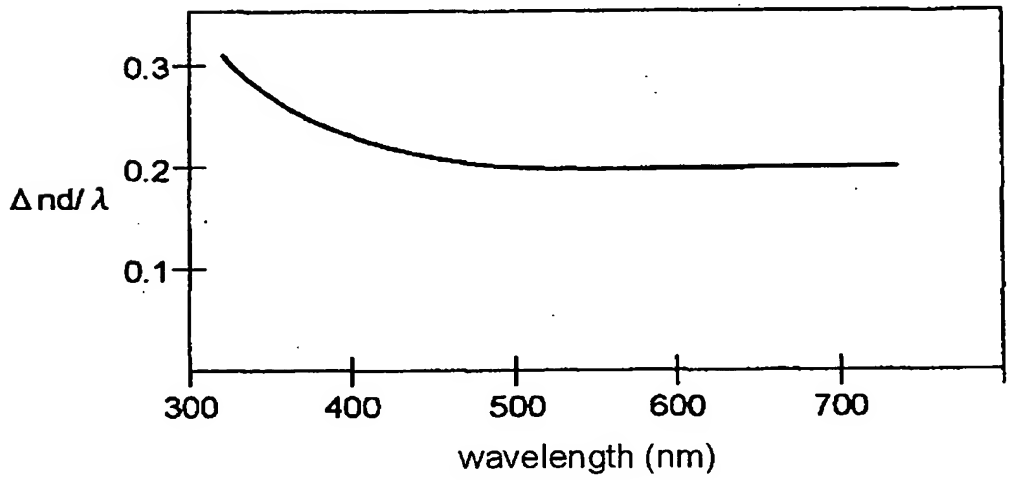


FIG. 14

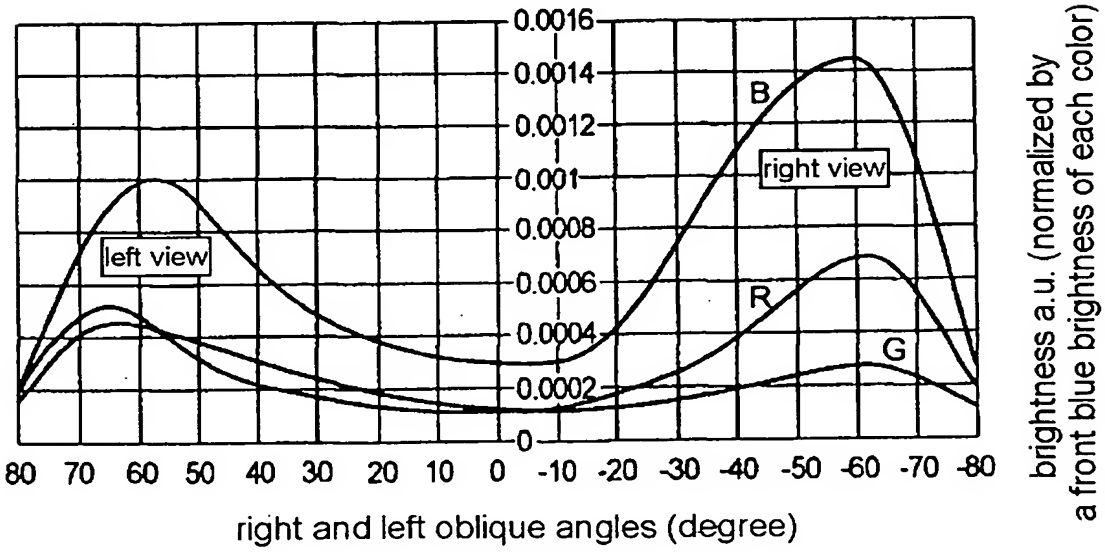


FIG. 15

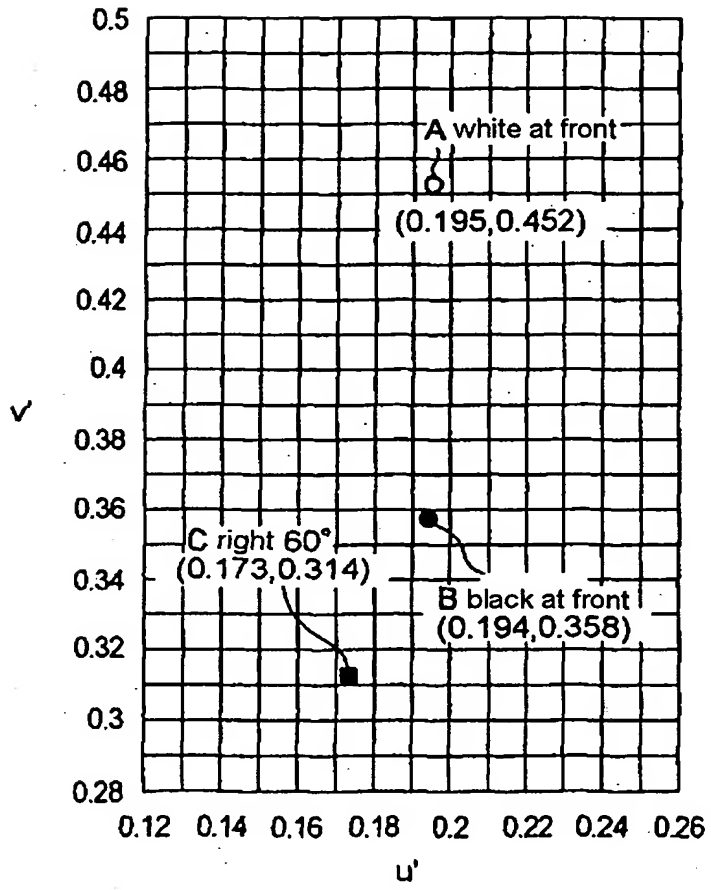

0.5
0.48
0.46
0.44
0.42
0.4
0.38
0.36
0.34
0.32
0.3
0.28
v'
A white at front
(0.195,0.452)
C right 60°
(0.173,0.314)
B black at front
(0.194,0.358)
0.12
0.14
0.16
0.18
0.2
0.22
0.24
0.26
u'

FIG. 16

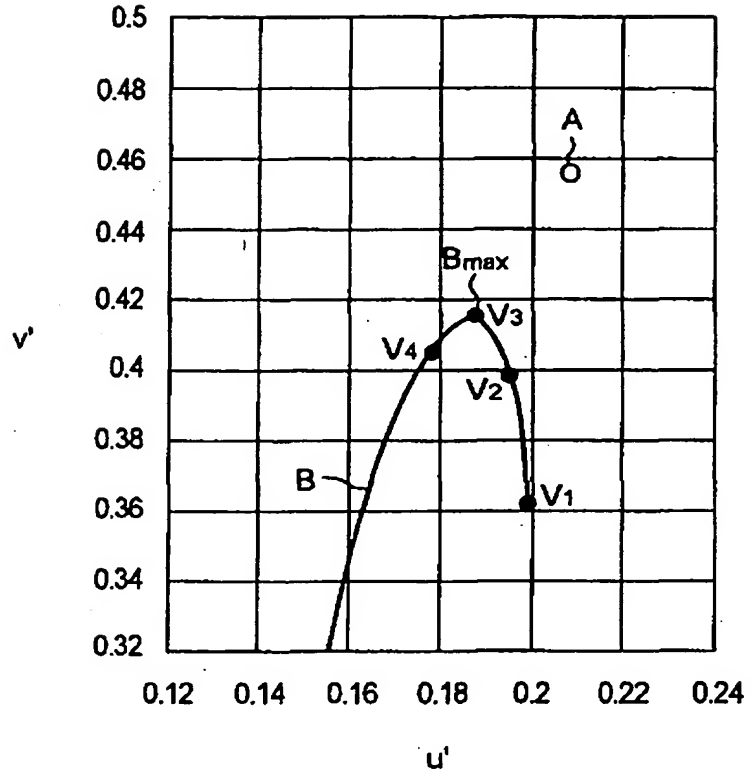

0.5
0.48
0.46
0.44
0.42
0.4
0.38
0.36
0.34
0.32
v'
A
O
Bmax
V3
V4
V2
B
V1
0.12
0.14
0.16
0.18
0.2
0.22
0.24
u'

FIG. 17

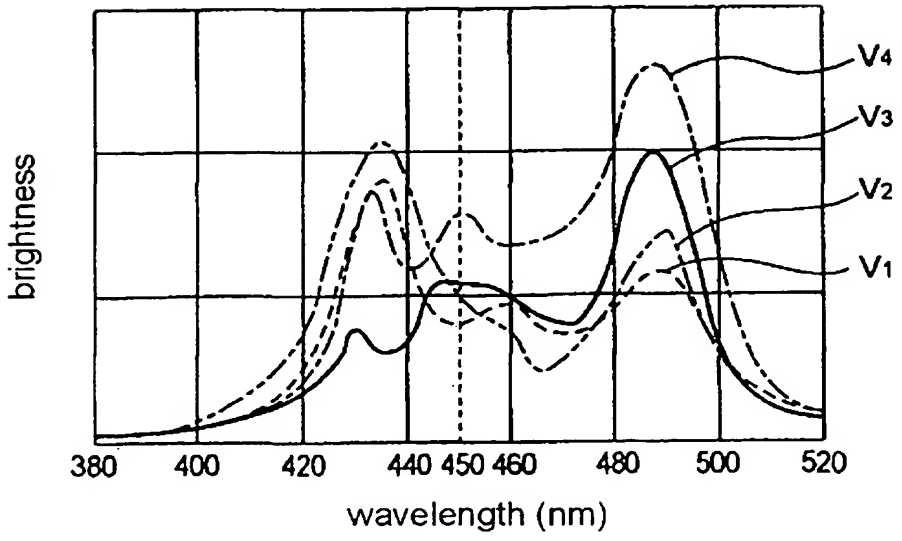

brightness
V4
V3
V2
V1
380
400
420
440
450
460
480
500
520
wavelength (nm)

FIG. 18

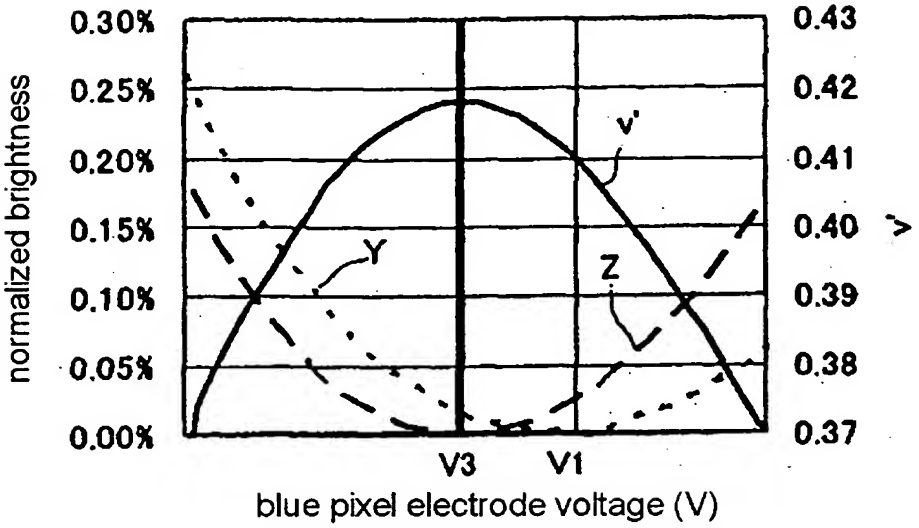
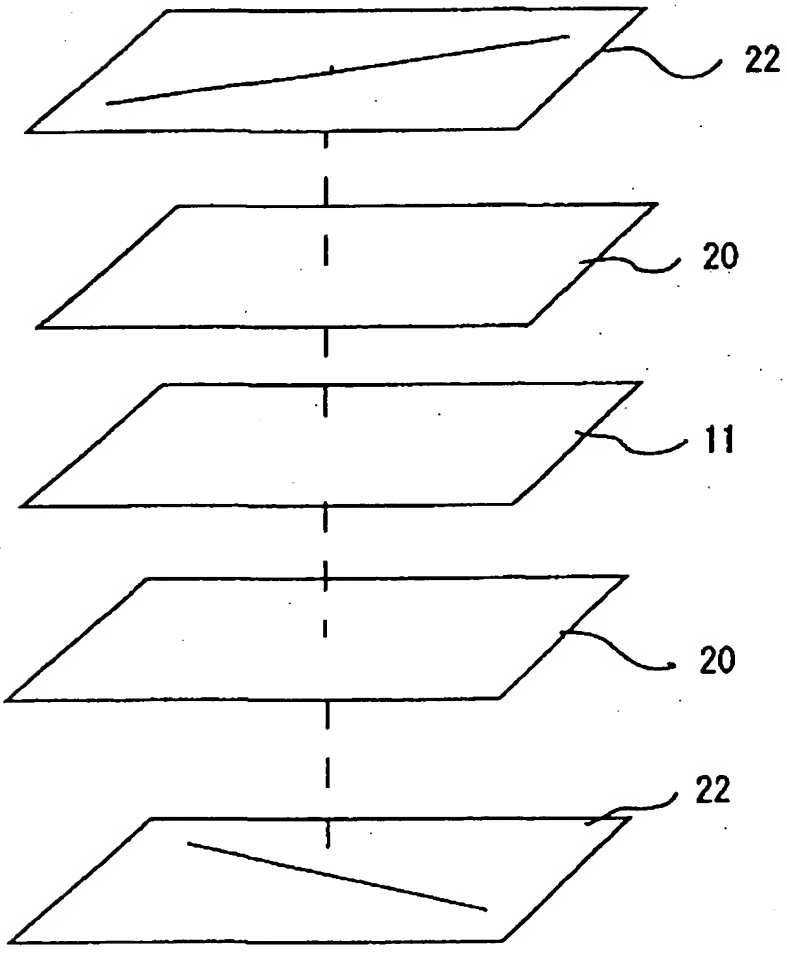

0.30%
0.25%
0.20%
0.15%
0.10%
0.05%
0.00%
normalized brightness
0.43
0.42
0.41
0.40
0.39
0.38
0.37
V'
Y
Z
V3
V1
blue pixel electrode voltage (V)

FIG. 19


22
20
11
20
22